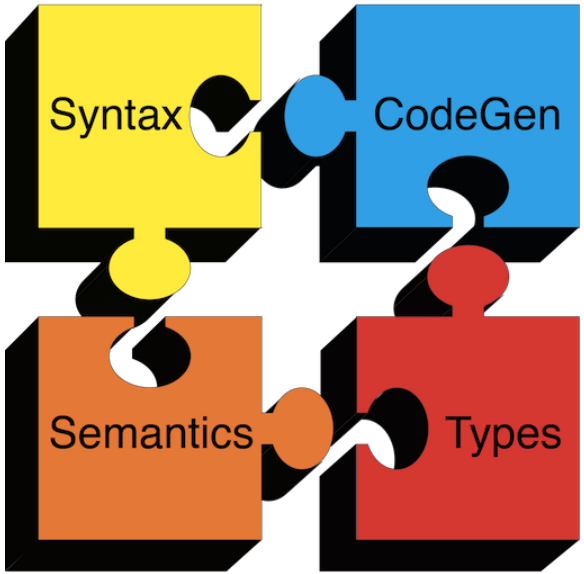

Compilers

Java Coercions

Java Coercions

- Java allows primitive types to be *coerced* in certain contexts.
- In 1 + 2.0, the int 1 is widened to a float 1.0
- A coercion is really just a primitive function the compiler inserts for you
  - Most languages have extensive coercions between base numeric types

Java Coercions

- Java distinguishes two kinds of coercions & casts:
  - *Widening* always succeed (int $\rightarrow$ float)
  - *Narrowing* may fail if data can't be converted to desired type (float $\rightarrow$ int, downcasts)
- Narrowing casts must be explicit
- Widening casts/coercions can be implicit

Java Coercions

What is the only type in Java for which there are no coercions/casts defined?

Java Coercions

- Coercions can lead to surprising behavior
  - Consider an example from PL/I
  - Let A,B,C be strings of 3 characters

B = ‘123’
C = ‘456’
A = B + C

- What is A?